

Artificial Intelligence's Contribution to Sustainability in Fashion: Both Good and Bad

By: Elyse Jackson

It is no mystery that with the technological advancements of the 21st century, faster fashion production breeds faster fleeting trends and vice-versa.¹ As social media platforms such as TikTok and Instagram have facilitated the fast fashion industry to the extent that it is now referred to as “ultra-fast fashion,” concerns have grown over the disastrous impacts it has had on the planet.² As AI rapidly expands, with it comes new opportunities for the fashion world that may not be fully understood yet. One of the most critical issues regarding the potential opportunities for AI expansion in fashion is its impact on the environment. “Ultra-fast fashion” has already experienced exponential growth over the years and has resulted in fashion becoming the second most polluting industry in the world after oil.³ Additionally, a quick Google search of fast fashion will quickly produce imagery of expansive textile landfills, polluted water sources, and destroyed ecosystems forced to their knees by discarded pieces of clothing. The environmental impact of fast fashion cannot be understated. This problem needs a strong solution that AI may or may not be able to provide. This piece investigates AI's benevolent and malevolent contributions towards fashion sustainability, beginning with the benevolent contributions.

AI could potentially alleviate the excessive waste associated with fast fashion by optimizing inventory levels.⁴ AI-powered programs such as Hypersonix provide inventory management systems that help avoid overstock.⁵ “With proper autonomous demand forecasting in place, the ideal solution for most companies will be a real-time perpetual inventory that can support available-to-promise commitments for customers and scalable persistent monitoring.”⁶ This may seem like an insignificant issue to address, but data suggests otherwise. The fast-fashion overproduction rate ranges from 30 to 40 percent from season to season.⁷ Overstock due to miscalculations of supply and demand is a significant issue that is way more far-reaching than the average consumer may imagine.⁸ All the inventory that isn't sold is either donated or disposed of in landfills, which pollutes the environment.⁹ AI algorithms can identify rising trends and consumer preferences while providing more accurate predictions for product demands.¹⁰ Perhaps not surprisingly, “according to studies from Opus Restructuring and Juniper Research,

¹ *Fashion is getting even faster: the rise of ultra-fast fashion*, TEXTILE CONSULT (last visited Sept. 15, 2023), <https://www.textileconsult.co.uk/2022/11/04/fashion-is-getting-even-faster-the-rise-of-ultra-fast-fashion/>.

² *Id.*

³ *Id.*

⁴ Aditya Balani, *Artificial Intelligence can assist fashion industry in cutting down fashion waste*, THE TIMES OF INDIA (Jul. 18, 2023, 3:07 PM), <https://timesofindia.indiatimes.com/blogs/voices/artificial-intelligence-can-assist-fashion-industry-in-cutting-down-fashion-waste/>.

⁵ Rob Neibauer, *AI in Inventory Management: Putting AI to Work to Optimize your Inventory*, HYPERSONIX (Apr. 24, 2023), <https://hypersonix.ai/blog/ai-in-inventory-management/>.

⁶ *Id.*

⁷ *How fashion brands can cut down overstock and diminish risks with on-demand manufacturing*, PLATFORM (last visited Sept. 15, 2023), <https://www.platforme.com/post/how-fashion-brands-can-cut-down-overstock-and-diminish-risks-with-on-demand-manufacturing>.

⁸ *Id.*

⁹ *Id.*

¹⁰ Balani, *supra* note 4.

AI in the fashion industry has become so widespread in 2020 that 44 percent of UK fashion retailers who have not implemented AI are currently facing bankruptcy.”¹¹

Breakdowns in the supply chain are yet another way in which fast fashion contributes to the degradation of the environment.¹² Supply chains are complex and can be riddled with waste at each step.¹³ Li & Fung provides an AI-powered supply chain management platform that provides real-time analytics from manufacturers to retail stores.¹⁴ This platform helps create a more efficient supply chain, which in turn lowers carbon emissions.¹⁵ Additionally, because the demands of the industry are global, transportation from manufacturers to retail stores or directly to customers results in higher carbon emissions.¹⁶ For H&M alone, carbon emissions from transporting goods made up 43 percent of its total greenhouse gas emissions.¹⁷ While some measures have been taken to alleviate these emissions, AI promises to analyze data in each step of the supply chain, including transportation, to improve transportation distances and narrow in on any efficiencies.¹⁸

AI can also provide groundbreaking innovations in textile manufacturing.¹⁹ AI-powered robots and machinery are beginning to replace human factory workers and complete the work at a much faster pace.²⁰ This can be beneficial as it removes the unethical use of underpaid and poorly treated workers in hazardous conditions and leaves robots the tasks that would otherwise be dangerous for humans.²¹

On the flip side of these optimistic predictions for the uses of AI in fashion sustainability are grim predictions of contributions to hyper-consumption. To understand how AI may further contribute to “ultra-fast fashion”, one must understand the algorithm employed by Shein. Shein is a fast fashion empire that employs an AI model for analyzing daily trends.²² Shein is a master of staying on top of trends on social media and then categorizing these trends on its website in ways familiar to the user.²³ For example, categories of fashion types trending on TikTok include Y2K, Cottagecore, and Dark Academia. Each of these categories are labeled as such on the Shein website and app.²⁴ Additionally, the “New In” section is updated every day and produced by

¹¹ Victor Gosselin, *How artificial intelligence can help fashion brands be more sustainable*, HEURITECH (Oct. 4, 2019), <https://www.heuritech.com/articles/how-artificial-intelligence-can-help-fashion-brands-be-more-sustainable/>.

¹² See AC, *Fast Fashion's Fast Impact on the Environment*, HARV. UNIV. BUS. SCHOOL, (Nov. 4, 2016), <https://d3.harvard.edu/platform-rctom/submission/fast-fashions-fast-impact-on-the-environment/>.

¹³ *Artificial Intelligence in Fashion: Reshaping the Entire Industry*, 3D LOOK (last visited Sept. 15, 2023), <https://3dlook.ai/content-hub/artificial-intelligence-in-fashion/>.

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ AC, *supra* note 12.

¹⁷ *Id.*

¹⁸ Balani, *supra* note 4.

¹⁹ Ron Schmelzer, *The Fashion Industry is Getting More Intelligent With AI*, FORBES (Jul. 16, 2019), <https://www.forbes.com/sites/cognitiveworld/2019/07/16/the-fashion-industry-is-getting-more-intelligent-with-ai/?sh=da07ff43c74d>.

²⁰ Scott Fishman, *How Artificial Intelligence is changing the fashion industry*, INDUS. (Feb. 28, 2023), <https://immago.com/ai-fashion-industry/>.

²¹ *Id.*

²² *Green AI: faux sustainability for fast fashion*, RETAIL INSIGHT NETWORK (Sept. 14, 2023), <https://www.retail-insight-network.com/comment/faux-sustainability-green-ai/?cf-view>.

²³ *Id.*

²⁴ *Id.*

AI.²⁵ Prioritizing trends has paid off tremendously for Shein, but has had a detrimental effect on the environment.²⁶ “[T]he manufacturers’ rapid use of virgin polyester and large consumption of oil churns out the same amount of carbon dioxide as approximately 180 coal-fired power plants, according to Synthetics Anonymous 2.0, a report published on fashion sustainability.”²⁷ Today, if you were to investigate for only a short time, you will find influencers on social media buying disproportionate amounts of Shein clothing called “hauls”.²⁸ These hauls are widely successful in driving traffic to Shein because as categorical trends such as Cottagecore and Y2K rise, Shein’s algorithm produces more and more content to cater to these growing audiences.²⁹ Shein clearly demonstrates the devastating effects that AI can have on the fashion industry. Without prioritizing sustainability and improving the environment, AI can be used solely to maximize profits to the detriment of the consumer and the environment.

AI presents the opportunity for great improvement or destruction depending greatly upon the user's priorities. It has the capacity to make tremendous strides toward improving carbon emissions and reducing waste. On the other hand, it also has the potential to displace thousands of women in the garment industry and contribute to overconsumption, as demonstrated through Shein’s use of trends. Corporate accountability should be emphasized to manage the ranging impacts of AI worldwide and mitigate the possible dangers of its spread. Additionally, the average consumer must be aware of when AI is being employed and guard themselves against the lures of overconsumption.

²⁵ *Id.*

²⁶ Astha Rajvanshi, *Shein Is the World’s Most Popular Fashion Brand-at a Huge Cost to Us All*, TIME (Jan. 17, 2023), <https://time.com/6247732/shein-climate-change-labor-fashion/>.

²⁷ *Id.*

²⁸ *Id.*

²⁹ *Id.*